

WHAT IS CLAIMED IS:

1. A semiconductor wafer which has undulation components on wafer back face and/or wafer front surface of $10 \mu\text{m}^3$ or less represented in terms of power spectrum density at least for the components at a wavelength of 10 mm.
2. A semiconductor wafer which exhibits a variation of power spectrum density of 2.0 or less for undulation components at a wavelength of from 3 mm to 20 mm of wafer back surface and/or wafer front surface.
3. The semiconductor wafer according to Claim 1, which exhibits a variation of power spectrum density of 2.0 or less for undulation components at a wavelength of from 3 mm to 20 mm of the wafer back surface and/or the wafer front surface.
4. The semiconductor wafer according to Claim 1, which exhibits wafer warpage of $20 \mu\text{m}$ or less.
5. The semiconductor wafer according to Claim 2, which exhibits wafer warpage of $20 \mu\text{m}$ or less.
6. The semiconductor wafer according to Claim 3, which exhibits wafer warpage of $20 \mu\text{m}$ or less.
7. The semiconductor wafer according to Claim 1, which

has a mirror polished surface at least for the wafer front surface.

8. The semiconductor wafer according to Claim 2, which has a mirror polished surface at least for the wafer front surface.

9. The semiconductor wafer according to Claim 3, which has a mirror polished surface at least for the wafer front surface.

10. The semiconductor wafer according to Claim 1, which is a silicon semiconductor wafer.

11. The semiconductor wafer according to Claim 2, which is a silicon semiconductor wafer.

12. The semiconductor wafer according to Claim 3, which is a silicon semiconductor wafer.

13. A wafer chuck provided with a holding surface for holding a wafer by chucking, wherein the holding surface has undulation components of $10 \mu\text{m}^3$ or less represented in terms of power spectrum density at least for the components at a wavelength of 10 mm.

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14. A method for producing a semiconductor wafer by

polishing a surface of the semiconductor wafer which is held at its back surface, which utilizes a semiconductor wafer to be polished having undulation components on wafer back surface of $10 \mu\text{m}^3$ or less represented in terms of power spectrum density at least for the components at a wavelength of $10 \mu\text{m}$.

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